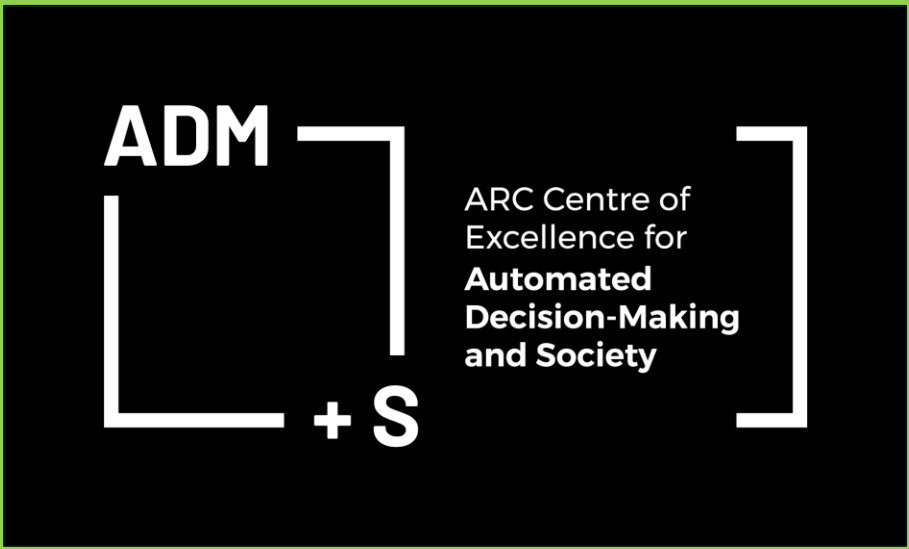


# Towards Investigating Biases in Spoken Conversational Search

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## Background

- 320 million smart speakers were being used globally (in 2020), estimated to grow to 640 million by 2025 [1].
- The popularity of ChatGPT and Bing Copilot are clear testament to users' preference for engaging in conversational search instead of the traditional ten-blue link approach.

*It comes with its own challenges.*



[1] <https://www.statista.com/statistics/878650/worldwide-smart-speaker-installed-base-by-country/>

## Challenges

- Constraints in quantity of information that can be transmitted over a voice-only channel [2].
- Biases in information consumption can negatively impact society especially in case of controversial topics [3].
- User attitude can be influenced due to System Induced Bias as well as Cognitive Bias [4].

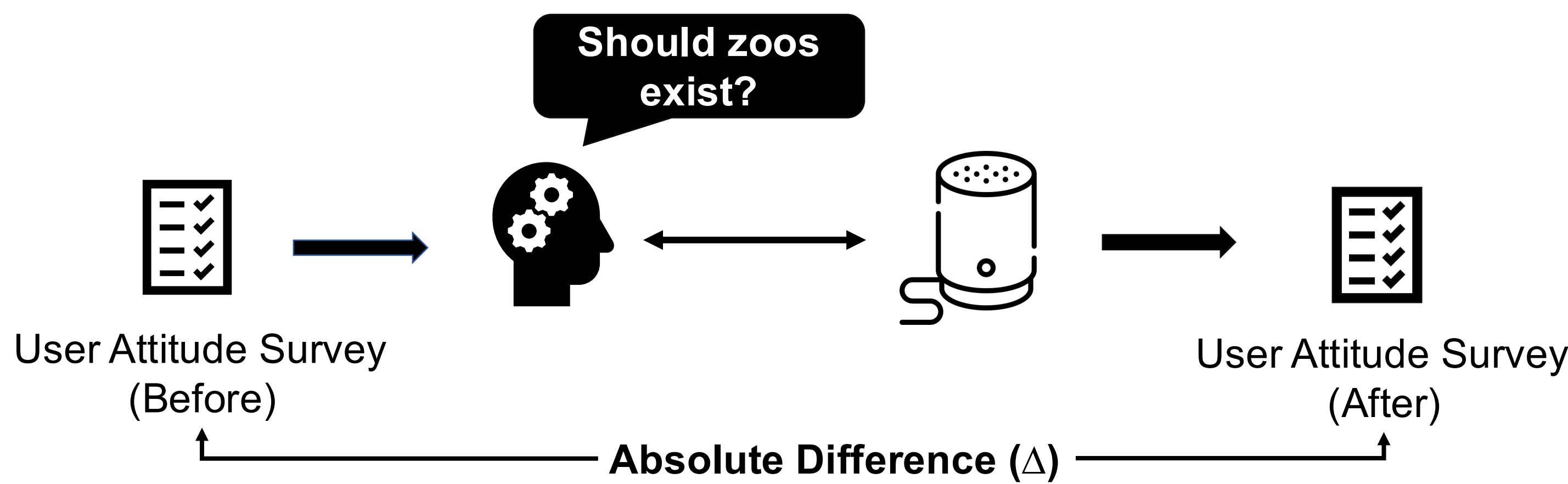
[2] Johanne R. Trippas, Damiano Spina, Mark Sanderson, and Lawrence Cavedon. 2015. Results Presentation Methods for a Spoken Conversational Search System. (NWSearch '15)

[3] Sachin Pathiyan Cherumanal, Damiano Spina, Falk Scholer, and W. Bruce Croft. 2021. Evaluating Fairness in Argument Retrieval.(CIKM '21).

[4] Tim Draws, Nava Tintarev, Ujwal Gadiraju, Alessandro Bozzon, and Benjamin Timmermans. 2021. This Is Not What We Ordered: Exploring Why Biased Search Result Rankings Affect User Attitudes on Debated Topics. (SIGIR '21).

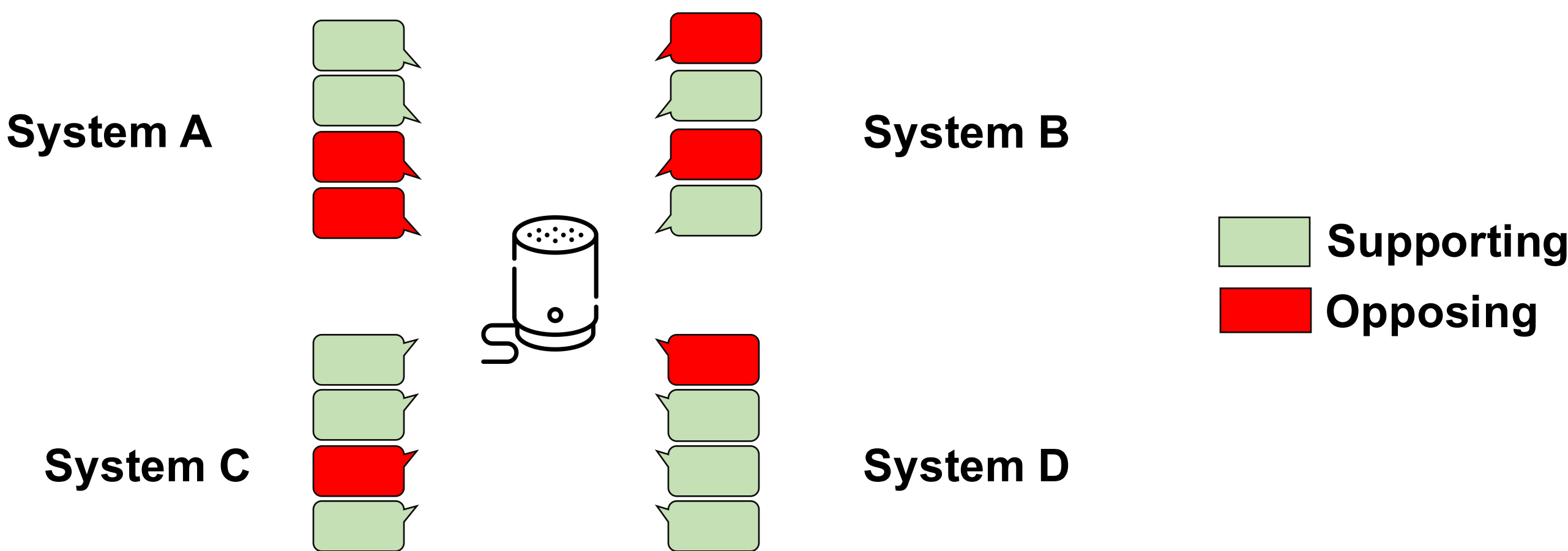
## Methodology

- Simulate a search scenario controlling the System Induced Biases.
- Users are made to interact with systems of varying levels and types of bias.

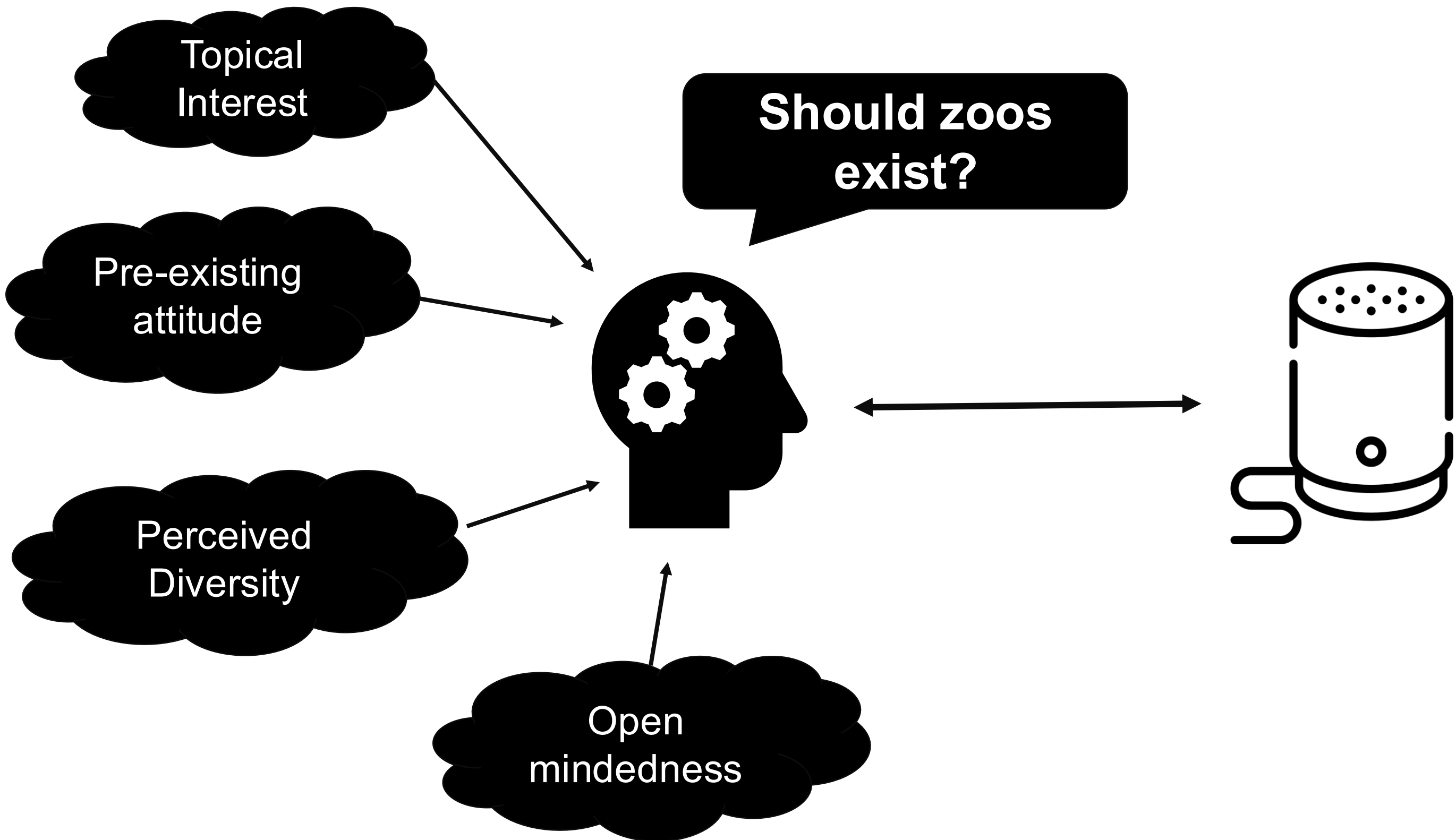


## Controlled Biases

- The order in which information is presented in an interaction (System A and System B).
- The exposure of different perspectives in an interaction (System C and System D).



## Variables



## Expected Outcomes

- Increased system bias correlates with greater shifts in user attitudes in a voice-only search.
- Varying the exposure of different perspectives, rather than the order of presentation correlates with greater shift in user attitude and higher perceived diversity.

### Proposed Future Work [5]:

Can physiological signals provide more granular insights and help mitigate such biases ?



[5] Kaixin Ji, Sachin Pathiyan Cherumanal, Johanne R. Trippas, Danula Hettiachchi, Flora D. Salim, Falk Scholer, and Damiano Spina. Towards Detecting and Mitigating Cognitive Bias in Spoken Conversational Search. (MobileHCI '24 Adjunct)

